TOBACCO INDUSTRY RESEARCH COMMITTEE

150 EAST FORTY SECOND STREET NEW YORK 17, N. Y.

Application For Research Grant #152

Date: February 20, 1957

1. Name of Investigator: Charles B. McCants, Department of Soils

2. Title: Arsenic content of soils and absorption by the tobacco plant

3. Institution & Address: North Carolina State College, Soils Department, Raleigh, North Carolina

4. Project or Subject: Since cancerous conditions have been developed through the use of arsenic, the deduction is made that the arsenic inhaled in cigarette smoke is a contributing factor toward the development of cancer.

1. To determine the arsenic content and distribution in soils used for the production of flue-cured tobacco.

2. To study the arsenic absorption by the tobacco plant from soils as influenced by soil type, by the arsenic content of the soil and by fertility practices.

3. To study the effect of certain soil properties on the retention of arsenic in the soil.

5. Detailed Plan of Procedure (Use reverse side if additional space is needed):

Representative surface and subsoil samples will be obtained from the major flue-cured tobacco areas in North Carolina. The random selection of the sampling sites will be modified where necessary to include the predominate soil types used in the production of tobacco. Included in these samples will be those from fields on experiment stations and farms from which can be obtained samples of field-grown tobacco that have received no arsenical sprays or dusts.

The soil samples will be analyzed for extractable arsenic, phosphorus, and such other chemical properties as may seem appropriate. The samples will represent various depths for a given soil in order to locate the area of highest arsenic concentration. When the analysis indicates an abnormally high level of arsenic in a soil, efforts will be made to obtain samples of plants grown on these soils if such plant material is not already available. The per cent arsenic in the plant material will be determined and correlated with the arsenic content of the soil.

As a supplement to the survey phase of the study, field experiments will be initiated in which different amounts of arsenic will be applied to the soil. Arsenic will be applied in only one year, but the experiments will be continued on the same sites for three or more years during which tobacco will be the test plant. The arsenic content and distribution in the soil and arsenic uptake by the plant will be determined for each year. Data from these experiments will provide additional evidence on the absorption of arsenic at various levels of soil arsenic and on changes in available arsenic in the soil with time.

Laboratory, greenhouse and field investigations will be used to study the factors which influence the movement of arsenic in soils. Among the factors to be considered will be the soil type, the phosphorus concentration in the soil and phosphorus applications.

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Source: https://www.industrydocuments.ucsf.edu/docs/kkvm0000

6. Budget Plan:

Salaries	$2,500
Expendable Supplies	300
Permanent Equipment	200
Overhead	
Other	
Total	$3,000

7. Anticipated Duration of Work: Three years.

8. Facilities and Staff Available:

Soils Department, North Carolina State College
C. B. McCants, Leader
W. G. Woltz, Cooperator
W. V. Bartholomew, Cooperator
M. T. Coleman, Cooperator
J. W. Fitts, Cooperator

9. Additional Requirements:

One graduate student with a M.S. degree working towards a Ph.D. degree will be assigned to this project. Additional hourly labor will be furnished for field and laboratory work. Routine analyses will be made in the Departmental Service Laboratory.

10. Additional Information (Including relation of work to other projects and other sources of supply):

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Signature /s/ J. W. Fitts Charles B. McCants
Director of Project

/s/ Dr. R. L. Lovvorn
Business Officer of the Institution
Director of Research
N. C. Agricultural Experiment Station

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